

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference  96605 - 28UTL	<b>FOR FURTHER ACTION</b>		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No.  PCT/US2005/010528	International filing date (day/month/year)  29/03/2005	(Earliest) Priority Date (day/month/year)  29/03/2004	
Applicant  THE UNIVERSITY OF HOUSTON SYSTEM			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 7 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☒ Certain claims were found unsearchable (See Box II).

3. ☒ Unity of invention is lacking (see Box III).

**4. With regard to the title,**

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

METALLIC NANOPARTICLES AND DISCRETE POLYMER-COATED NANOPARTICLES

**5. With regard to the abstract,**

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regard to the drawings,**

a. the figure of the drawings to be published with the abstract is Figure No. 36a-c

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> A61K9/00      A61K41/00      B01J13/02      B22F1/00      B22F1/02 G01N21/55      B41J2/01		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) A61K    G01N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, WPI Data, EMBASE, BIOSIS		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/35081 A (THE PENN STATE RESEARCH FOUNDATION; NATAN, MICHAEL, J) 17 May 2001 (2001-05-17) the whole document page 9, lines 7-15 page 23, lines 6-20 claims; examples -----	1,4-10, 16-23, 27,30
X	US 2002/187347 A1 (HALAS NANCY J ET AL) 12 December 2002 (2002-12-12) the whole document figures 1-3 examples claims 1-3,7,8,16,17 paragraphs '0012! - '0016! ----- -/--	1,4-10, 16-23, 27,30
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *Z* document member of the same patent family		
Date of the actual completion of the international search  14 September 2005		Date of mailing of the international search report  12. 01. 2006
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  Luangkhrot, N

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 5 023 139 A (BIRNBOIM ET AL) 11 June 1991 (1991-06-11)</p> <p>the whole document claims 16,19,26</p> <p>-----</p>	<p>1,4-10, 16-23, 27,30</p>
X	<p>US 2002/103517 A1 (WEST JENNIFER L ET AL) 1 August 2002 (2002-08-01)</p> <p>the whole document paragraphs '0176! - '0179! example 6 claim 5</p> <p>-----</p>	<p>1,4-10, 16-23, 27,30</p>

## INTERNATIONAL SEARCH REPORT

international application No.  
PCT/US2005/010528**Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claim 30 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
  
1, 4-10, 16-23, 27, 30

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,4-10,16-23,27,30

A nanostructure composition comprising a nanoparticle core and a nanoshell, characterized in that both contain a conductive material which is the same or different, and said nanostructure composition does not contain a bio-compatible polymer coating.

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2. claims: 2,3,4-10,11-12,16-23,28,29,30

A nanostructure composition comprising a nanoparticle core and a plurality of nanorods, characterized in that both contain a conductive material which is the same or different, and said nanostructure composition does not contain a bio-compatible polymer coating.

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3. claims: 13-15,16-23,24-26,30

A nanostructure composition comprising a nanoparticle core and a biocompatible polymer coating

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## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claim 30 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

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Continuation of Box II.1

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0135081	A	17-05-2001	AU 3081301 A	06-06-2001
			CA 2391009 A1	17-05-2001
			EP 1236034 A1	04-09-2002
			JP 2003514224 T	15-04-2003
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US 2002187347	A1	12-12-2002	NONE	
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US 5023139	A	11-06-1991	AU 5438990 A	05-11-1990
			CA 2013813 A1	04-10-1990
			EP 0466810 A1	22-01-1992
			JP 4504314 T	30-07-1992
			WO 9011890 A1	18-10-1990
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US 2002103517	A1	01-08-2002	NONE	
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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0135081	A	17-05-2001	AU 3081301 A CA 2391009 A1 EP 1236034 A1 JP 2003514224 T	06-06-2001 17-05-2001 04-09-2002 15-04-2003
US 2002187347	A1	12-12-2002	NONE	
US 5023139	A	11-06-1991	AU 5438990 A CA 2013813 A1 EP 0466810 A1 JP 4504314 T WO 9011890 A1	05-11-1990 04-10-1990 22-01-1992 30-07-1992 18-10-1990
US 2002103517	A1	01-08-2002	NONE	



## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1,4-10,16-23,27,30

A nanostructure composition comprising a nanoparticle core and a nanoshell, characterized in that both contain a conductive material which is the same or different, and said nanostructure composition does not contain a bio-compatible polymer coating.

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2. claims: 2,3,4-10,11-12,16-23,28,29,30

A nanostructure composition comprising a nanoparticle core and a plurality of nanorods, characterized in that both contain a conductive material which is the same or different, and said nanostructure composition does not contain a bio-compatible polymer coating.

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3. claims: 13-15,16-23,24-26,30

A nanostructure composition comprising a nanoparticle core and a biocompatible polymer coating

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C.(Continuation) DOCUMENT CONSIDERED TO BE RELEVANT		
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X	US 2002/103517 A1 (WEST JENNIFER L ET AL) 1 August 2002 (2002-08-01)  the whole document paragraphs '0176! - '0179! example 6 claim 5 -----	1,4-10, 16-23, 27,30